

# DESERT

PLANT LIFE

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DESERT ISLANDS OF  
BAJA CALIFORNIA

II. GUADALUPE ISLAND

*Reid Moran and George Lindsay*

READING AND REFERENCE

A NEW KALANCHOE FROM THE  
BELGIAN CONGO

CACTUS AND OTHER SUCCULENTS

LAND PLANTS COLLECTED  
BY THE VALERO III

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*January, 1950*

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## GUADALUPE ISLAND

Guadalupe Island lies about 250 miles south of San Diego and about 150 miles off the coast of Baja California, Mexico; but despite its nearness to California, it is little known and rarely visited.

Guadalupe Island is a 16,000-foot volcanic peak, three-quarters submerged beneath the sea. Thus it is separated from other land areas by oceanic depths of 12,000 feet and more. There is little reason to believe that it has ever been connected with the continent or with any other island: it appears to be an oceanic island in every sense and to have acquired its plant life across the sea.

The flora of Guadalupe Island is of great interest to botanists. Of about 150 native species of vascular plants, approximately 23 percent are endemic to the island; that is, they are found on this island and nowhere else. An additional 10 percent are found only on Guadalupe and the other islands of Baja California and California, though particularly on those of California. Among the more conspicuous and remarkable endemics are the handsome Guadalupe Palm, *Erythea edulis*, and Guadalupe Cypress, *Cupressus guadalupensis*, both of which are now cultivated in California.

The first naturalist to visit Guadalupe Island was Dr. Edward Palmer, who spent three months there in 1875. He wrote that the island was a paradise. Goats, which had already been introduced at the time of Palmer's visit, have since multiplied and nearly destroyed the original vegetation. All areas that they can reach are as closely cropped as a well-kept lawn and now support mostly weeds. Many of the endemic species doubtless are extinct, though some persist, especially on cliffs inaccessible to goats (and usually to botanists as well). The shrubby species in particular are virtually exterminated. The trees remain only because goats can't climb them: the tree species seem doomed to extinction with the passing of the present generation, for no seedlings escape these voracious beasts.

Dr. Palmer found not only many endemic plants but also eight endemic species of birds. Domestic cats gone wild on the island have since accounted for most of these. Thus this island, which once was a naturalists' paradise, has been largely despoiled by animals introduced by man.

Twenty-two miles long and four to seven miles wide, Guadalupe Island has roughly the same size and shape as Catalina Island off our own coast. But it is more than 4,000 feet high and thus nearly twice as high as Catalina; and it is about twice as rugged. The island is high from the middle to the north end and gradually tapers toward the south. The central part is an uneven plateau surrounded, especially toward the north, by precipitous slopes and sheer cliffs of great height.

Most of the island is of red volcanic rock, and several of the lesser peaks are evidently volcanic cones. At the northeast end of the island is the remnant of a great crater, half of which has been eroded away by the sea. In the bottom of this half-crater a dome of light-colored



1. Outer Islet (left) and Inner Islet from the south end of Guadalupe Island.



2. Guadalupe Island Palm. *Erythea edulis*.



3. Guadalupe Cypress. *Cupressus guadalupensis*.



rock, also truncated by the waves, appears from the sea like a glacier slightly confused as to latitude.

The Guadalupe Cypress trees grow in a single grove of several square miles on top of the island and near the middle from north to south. The palms are found in canyons mostly north of the middle of the island and are especially abundant on the middle and higher slopes at the north end. Along the ridge at the north end grows Monterey Pine, *Pinus radiata*, whose next most southerly occurrence is in San Luis Obispo County, California. On this same ridge grows Island Oak, *Quercus tomentella*, which is found also on some of the islands of southern California.

The pines and oaks grow on the west slope of the main ridge and stop abruptly at the summit. We noted that the fog often banked up against the west side of this ridge and soon dissipated as it blew across to the east side. Moisture condensing on the trees and dripping on the ground causes seepages and springs in their vicinity, whereas surrounding areas are dry. Thus it appears that the trees bring about increased soil moisture, which in turn may be necessary for their own growth.

During the winter, according to Dr. Palmer, there may be considerable rain and some snow and hail on the top of the island, and at night ice an inch thick may form. The Cavanaghs, who visited the island again in 1949, report that there was a heavy snowfall in the winter of 1948-49. In April we found it quite warm and dry at sea level. The southern end of the island especially is very dry and barren.

At the extreme southern end of the island, the Mexican government maintains a weather station, which is in contact with the mainland by radio. Otherwise the island is without human habitants. In the mouth of the canyon at the Northeast Anchorage, however, there are several small buildings which in times past have housed Mexican garrisons. From there a trail climbs to the cypress grove and spring. On the beach at the Northeast Anchorage are the remains of a goatmeat cannery, which, regrettably, is no longer in operation, though evidently not for lack of goats.

Large herds of elephant seals spend much of their time napping on the beaches of Guadalupe Island. These curious mammals are similar to but much larger than the sea lions of our own coast. They are much less timid at the approach of men than are sea lions. Once widely distributed on the islands and shores of Baja California and California, the elephant seals were reduced almost to the point of extinction, only one small herd on Guadalupe Island remaining. Now they are increasing and have occupied most of the suitable beaches of Guadalupe, San Benitos, and Coronados Islands, Baja California, and are sometimes seen on San Nicolas Island, California.

Two species of cacti are native to Guadalupe Island, both at low elevations. A cholla in the central and northern part has been reported as *Opuntia prolifera*, but it seems somewhat different from the mainland form. Among rocks of the south-end desert grow the single heads of a small *Mammillaria*. This has been identified as *M. Goodridgei*, first described from Cedros Island, but it differs in several respects.

Iceplant, *Cryophytum crystallinum*, is common at lower elevations

throughout the island. At the southern end we also found *C. nodiflorum*.

Dr. Francesco Franceschi, the Santa Barbara horticulturist, visited Guadalupe Island in 1892 and published an interesting account of his trip and of the plants which he found. He mentioned finding one small plant of a "*Cotyledon* sp." on a rock by the trail not far from the landing. No other list mentions any *Dudleya*. Therefore, we felt fortunate in finding two species. One grew on a north-facing basaltic cliff about 3,500 feet above sea level in the region of the Monterey Pines at the northern end of the island. Only one clump was found, growing above the reach of goats, where it could be collected only with some difficulty and risk. This plant resembles members of the *D. caespitosa* complex such as grow on the coast from central California to Point Mugu, but without flowers it is impossible to say what its relationships are.

Rowing ashore at the southern end of the island, we noticed some strange-looking plants on a black lava rock just offshore. Upon landing, we found them to be curious succulent shrubs, which proved to be *Talinum guadalupense*, a member of the Portulacaceae. Although we did not find this plant on the main island, it is abundant on this offlying rock, which otherwise is nearly barren.

The Guadalupe *Talinum* is a much-branched shrub one to two feet high, with succulent stems half an inch or more thick at their rounded ends and sometimes three inches thick at the base. Most of the plants were nearly or quite leafless, and their thick grey stems, often somewhat knobby, brought to mind vague recollections of south African Euphorbias. One plant was fully leafed, with rosettes 2 to 4 inches in diameter, of 10 to 15 leaves. The obovate-spatulate succulent leaves are bluish green with bright purple-red margins and are 1 to 1½ inches long and about ¼ inch thick. The rounded shrub in full leaf somewhat recalls a large specimen of *Aeonium Haworthii*.

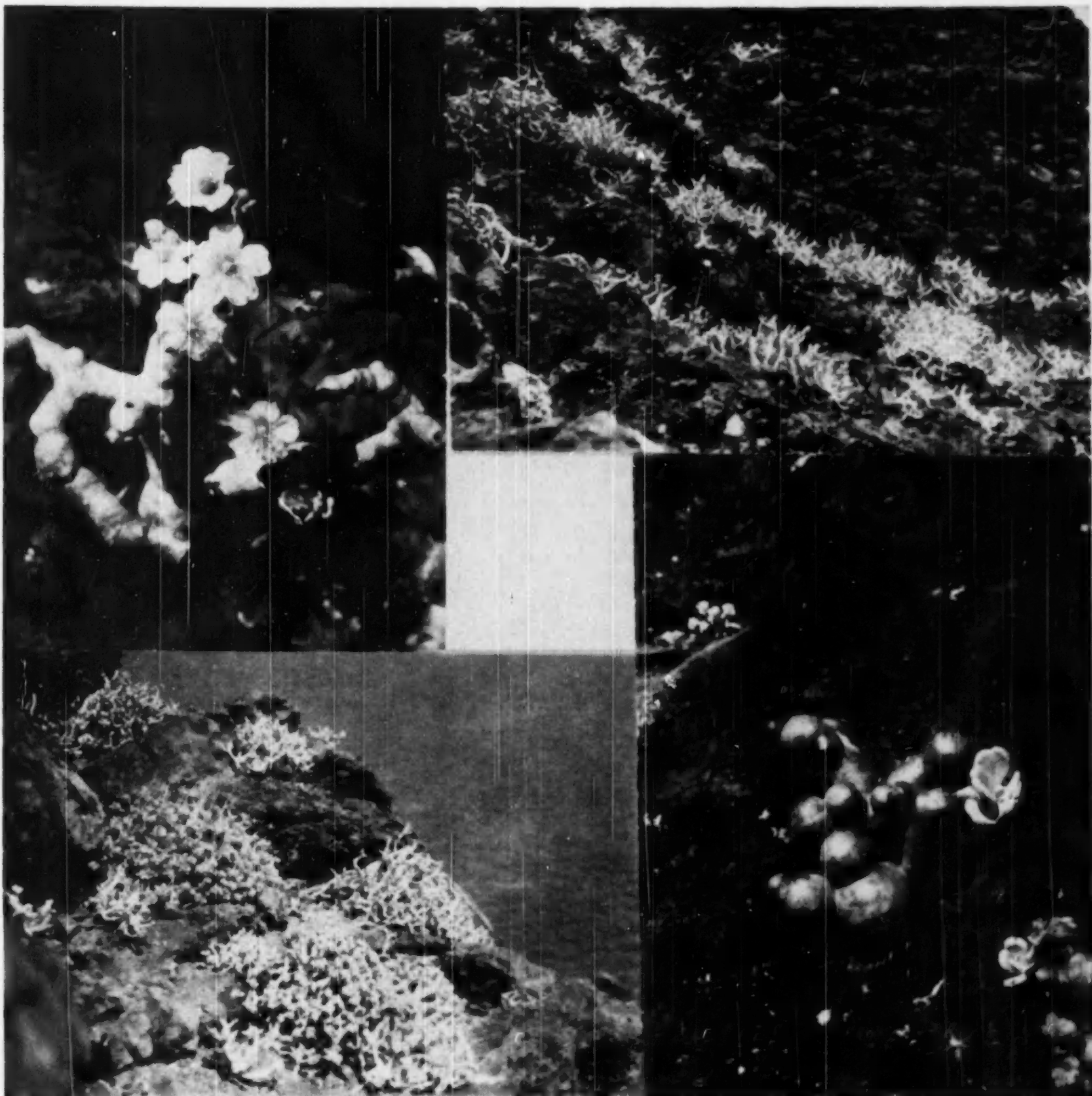
The terminal floral stem bears a foot-long panicle of flowers each about an inch in diameter, with purplish-veined calyx, beautiful rose-colored petals, purple filaments, and yellow anthers. Though many floral stems were developing, few flowers were yet open. Two weeks later we might have seen a very handsome display of flowers.

The Guadalupe *Talinum* was first collected in 1897 by a party searching for fur seals. It has since been overlooked by botanical collectors, though at least one living plant has found its way to California.\*

Off the southern end of Guadalupe Island lie two islets, where virgin Guadalupe vegetation is safe from ravaging goats. The sheer slopes of Inner Islet place its temptingly lush cap of vegetation beyond the reach of botanists. We had doubts, too, of scaling Outer Islet, a volcanic cone surrounded on most sides by vertical cliffs several hundred feet high. But on the north side the rim of the crater dips to within 100 feet of the sea, and the vertical cliffs give place to a scalable slope. There, too, a small cove gives some slight protection against the waves and the tidal currents which run through the gap between the two islets.

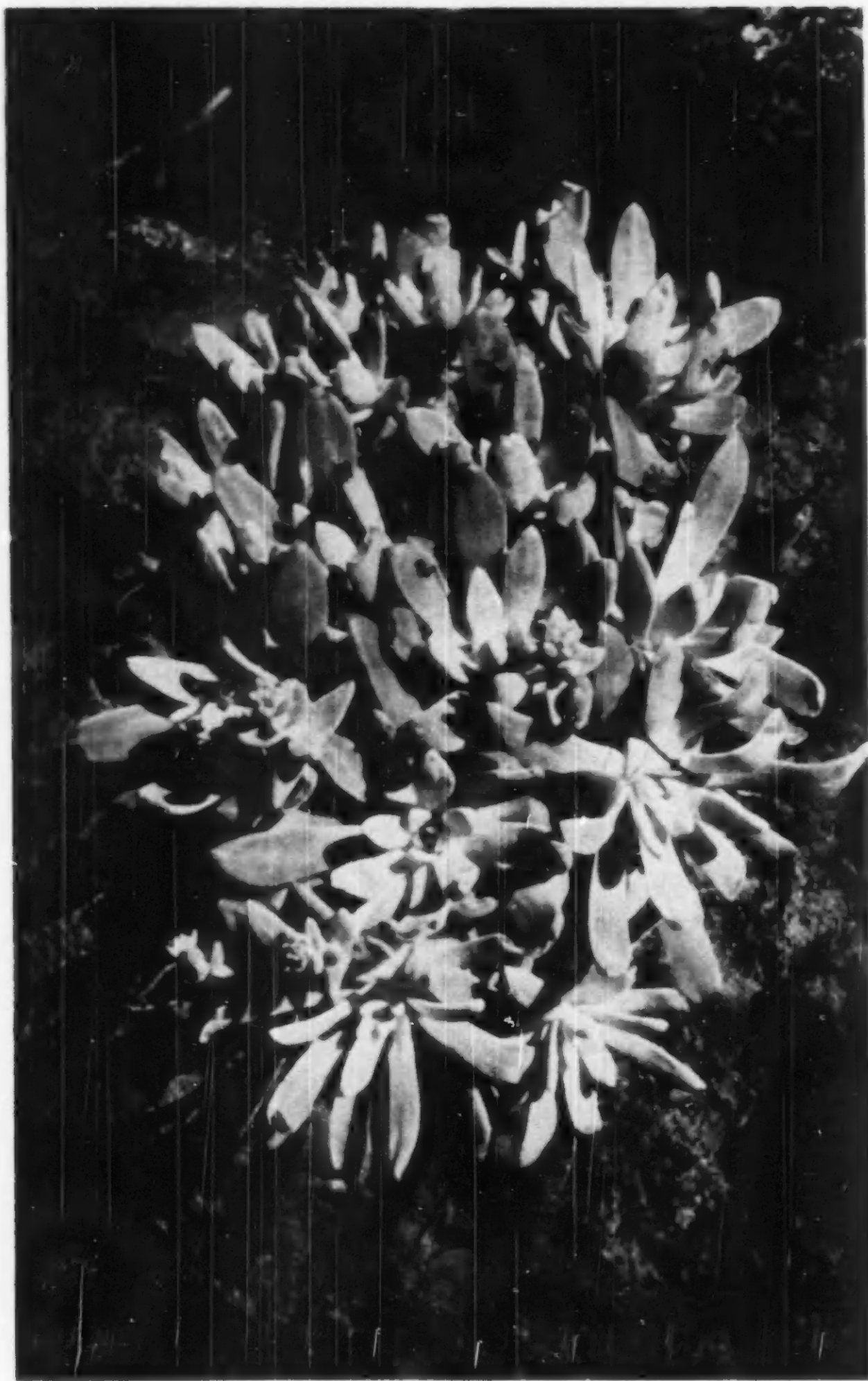
\* Journ. Cact. & Succ. So. Amer. 9:41. 1937.





*Talinum Guadalupe*

1. Flowering plant.
2. Plants in crevices in lava rock.
3. Leafless plants and one in full leaf.
4. Young plant with one leaf rosette.



*Dudleya* sp. from cliff at north end of island at ca. 3500'.  
(Plant removed from cliff for photographing.)



We attempted a landing one day with a skiff but gave it up as too dangerous. On our last day at Guadalupe Island, with some anxiety but no real difficulty, we landed with a rubber life raft. Unfortunately, however, we did not have enough self-confidence to risk our cameras in the landing. Having scrambled up to the rim, we found in the crater just below us a flat floor of alluvium perhaps two acres in extent. Among the sparse vegetation of this floor were many plants of *Talinum*. The sloping sides of the crater are just scalable and are divided as if into paving blocks by vertical and horizontal cracks, where many low-growing plants find foothold. We found many interesting plants, including several endemics and several plants which had not previously been recorded from Guadalupe Island.

The most interesting plant found on Outer Islet was a new species of *Dudleya*, quite different from the plant collected at the northern end of the island. The clustered green rosettes were scarcely more than 3 inches in diameter, but they contained a large number of leaves. Most of the leaves that would function next season were already present, though small, at the center of the rosette. Thus the leaves were of two fairly distinct sizes rather than grading from small to large as is usual in *Dudleya*. A curious feature of the plant is the contorted floral stems. On all plants that we saw, each floral stem, whether immature or persisting from the previous year, was sinuously twisted.

When we had been ashore only an hour and a half, though we had not finished our collecting, the captain's gun warned us that we should return to the *Marviento*.

## ☆ Reading and Reference ☆

LAND PLANTS COLLECTED BY THE VALERO III, ALLAN HANCOCK EXPEDITIONS 1937-1941, by Howard Scott Gentry. Published as the *Allan Hancock Pacific Expeditions Vol. 13 No. 2*, University of Southern California Press, 1949, 245 pages, 15 plates. Price \$3.25.

Between 1931 and 1941 the Valero III, research ship of the Allan Hancock Foundation, ploughed the waters of the eastern Pacific, investigating little known regions. Primarily the problems studied were in the marine biological and oceanographical fields. Botanically, the most important collections were of marine algae, but incidental collections of land plants were made.

Botanists interested in the flora of the west coasts of Mexico and Central America, as well as the adjacent islands, have long wondered what discoveries and collections of land plants the Hancock Pacific Expeditions had made. Howard Scott Gentry joined the staff of the Hancock Foundation with the primary purpose of working up the land plants which had been collected, and this book is a report of that work and those collections.

Dr. Gentry has organized the report under the geographical regions in which collections were made. These are: The Channel Islands of California, Cedros and San Benitos Islands, Revilla Gigedo Islands, Tres Marias Islands, Gulf of California, Jalisco and Oaxaca, Mexico, and Costa Rica. Each section is introduced with a most valuable discussion of the physiography, climate, and plant geography, with a study of the historical and developmental aspects of the flora involved. These discussions add much to the value of the plant lists and charts of the regions. Dr. Gentry's background of exhaustive field investigations of the flora of Northwestern Mexico make him uniquely able to prepare this report, which shows the same thorough work as his "Rio Mayo Plants".

It is unfortunate that the mechanics of marine collection prevent exhaustive land work to be carried out on the same expedition—with the result that land plant collections are considered incidental to the Hancock Pacific Expeditions. Plant collection numbers, however, indicate that E. Yale Dawson, an editorial contributor to *Desert Plant Life*, made full use of all his time ashore!

This report is of real value to all those interested in the flora of the regions covered.

GEORGE A. LINDSAY  
Lakeside, California



CACTUS AND OTHER SUCCULENT PLANTS, A PRIMARY. H. M. Roan in cooperation with C. R. Hancock and M. Claque-Taylor. Published by the National Cactus Society, 1949. Illustrated. Postpaid 10.6.

The hope to produce a book, simple and nontechnical, that would at the same time be acceptable to the greatest number, has been realized beyond the author's expectation.

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It is somewhat puzzling to note that in both editions *Sedum* has less than one fourth page while to *Mesembryanthemum* is given six pages in the first edition, four in the latter.

If the book is already in the library well and good. If not, there is a special bargain in the price, considering the present exchange rates between the two countries. Even without it the book would be about as good as any of this type that is obtainable. Four thousand purchasers can't be wrong!

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#### FROM THE EXCHANGES

BULLETIN DU JARDIN BOTANIQUE DE L'ÉTAT. Brussels of December, 1949, Volume XIX, contains an article: Concerning some of the species of the genus *Kalanchoe* from the Belgian Congo. It is written by Dr. Raymond-Hamet, author of a monograph on the genus as a result of his plant study at the Brussels Herbarium.

In the four pages he discusses Persoon's *Kalanchoes* among others and adds a new description in honor of Professor Robyns: *Kalanchoe Robynsiana* Raymond-Hamet.

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From the University of Cochabamba, Bolivia comes REVISTA DE AGRICULTURA. In it Dr. Martin Cardenas writes his notes on the Bolivian Cacti. He seeks to enlarge the distributional area of cacti, some hitherto described as only from regions outside Bolivia, but native to that country no less. Among them are *Cleistocactus Baumannii*, reported previously from Argentine, Paraguay and Uruguay only; *Harrisia tortuosa* from Argentine and *Stetsonia coryne* from Argentine. Photographs of *Lobivia caespitosa* shown are of plants in their native habitat and in the Darmstadt Botanic Garden.

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THE FAUX HERBARIUM BULLETIN from Victoria, Australia is to be a link in a new venture for that part of the world with research workers elsewhere. There is at present no collection of properly prepared herbarium material that may be consulted when in doubt of the identity of a specimen. Neither has there been any attempt to set out plants in such a manner that their relationships to each other may be studied. Generously supplied with illustrations the new publication starts out with the subscription price of twelve shillings per annum.

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